

# NO-DICTIONARY SCRABBLE

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In the August 1974 Kickshaws, Dave Silverman suggested a number of Scrabble variants for jaded players. One that he neglected to mention does away with the dictionary entirely, allowing any combination of letters to count as a "word". In this version, Scrabble is reduced to a purely mathematical game, one in which players alternately place one to seven numbered tiles on the board in such a fashion as to maximize their own score and minimize their opponent's opportunities.

Several months ago, the editor asked me to diagram the highest single-move score possible in no-dictionary Scrabble. Using the principles discussed in "The Highest One-Move Scrabble Score" in the February 1974 Word Ways, it was a relatively easy matter to come up with the position diagrammed below. The seven tiles J, F, F, Q, K, Z and X are played on the final move for a score of 3,119 points:

J	F	F	Q	H	H	V	K	V	W	W	Z	Y	Y	X
B	O	O	O	O		O	C	O		O	O	U	*	P
B	I	I	I				C							P
G	I	I	I				M							D
G	I	I	I				M							D
G	L	L	L				D							D
A	R	R	R				A							A
A	R	R	R				A							A
E	T	T	T				E							E
A	S	S	S				A							A
E	T	T	T				E							E
E	U	U	U				E							E
E	L	S					E							E
N							N							N
N							N							N

To obtain this score, all attention must be directed to forming a single fifteen-letter word across the top of the Scrabble board containing all letters with values of five or more. Q and Z must be played on positions 4 and 12, and J, X and K must be played on positions 1, 8 and 15; F, H, V, W and Y can be distributed in any manner among the remaining positions. However, there is considerable latitude in the arrangement of the other 84 letters. Obviously, any letter can be swapped with one of equivalent value. Less obviously, the letters B, G, C, P, M and D can be arranged in any way whatever in the columns headed by J, K or X; furthermore, the letters I, L, R, S, T and U can be assigned to any column headed by F, Q or Z.

Encouraged by this success, I subsequently tackled the considerably harder job of finding the highest complete-game score (for both players) possible in no-dictionary Scrabble. After considerable experimentation, I developed the following final position, together with the moves required to reach it, for a total score of 5,609 points:

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      K Y V Z V M C F B M P X D D G
      E I L A N I R I N T T *
      R S E I
      A A A E
      U E O A
      L I N T
      E L T O
      R I O E U N E R
      A E T O
      I U S A
      N A I O
      E O S R
      O E U E
      O R I N T E L A S
      H F W Q Y H P W C B D J G D G
  
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<u>Score</u>	<u>Letters</u>	<u>Words Formed</u>
66	EEINORU	ioeuner (bonus)
76	AEILSY	yisaeili (bonus)
2	R	rs
2	U	ue
4	L	ul, li
5	E	ule, el
102	AELNOTV	vleaonto, yv, il, rse, aa, ueo, lin, elt (bonus)
63	AEIINNR	eilanirin, er (bonus)
5	V	vn
11	M	vm, mi
14	C	vmc, cr
4	B	bn
24	MT	bm, mt, eilanirint
24	PT	bmp, pt, eilanirintt
11	*	eilanirintt*
96	AEEFORU	yisaeilieuaorf (bonus)
117	IISSTUW	vleaontotsisuiw, et, us, ai, os, eu, ri, fw (bonus)
61	AELNOST	orintelas (bonus)
5	Y	ty
13	H	yh, eh
15	P	yhp, lp
4	C	sc
6	B	cb
8	D	cbd
6	O	elto, oe
7	T	lint, toe
8	A	atoe, ueoa
139	AAEINOR	erauleraineoo, aaa, rioeuner, aet, ius, nai, eos, oeu (bonus)

2262	DDFGKXZ	kyvzvmcfbmxddg, kerauleraineoo, za, fi, x* (bonus)
2231	DGGHJQW	hfwqyhpwcbdjgdg, kerauleraineooh, nq, aw (bonus)
218	AEEIOOR	zaieatoeoaorenq, rsei, aae, aeto, iusa, naio, eosr, oeue (bonus)

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The strategy that I used was to form two fifteen-letter words across opposite edges of the Scrabble board, containing all letters with values of two or more. The letters Q, Z, J and X were placed on positions 4 and 12 to obtain the letter bonuses. The next highest-valued letters were placed on triple-word bonus squares whenever perpendicular words were also involved. The arrangement of the remaining letters in the two fifteen-letter words was such that the higher-valued letters were also involved in perpendicular words. The remaining 69 letters stressed playing seven at a time for the 50-point bonus, capitalized on the high-valued letters already played (being as concentrated as possible to draw on adjacent points), and used the multiple-point and double-word squares to full advantage. Unfortunately, these objectives are not entirely consistent, and there appears to be no overriding order of importance for a best attack on the problem. It may well be possible to improve the arrangement given above.

Note that only 99 Scrabble tiles have been employed in these two games. Since a game is terminated when one of the two players has used up all his tiles, the other player must have at least one tile remaining in his hand at that time.

These studies shed considerable light on the amount of improvement that can be expected in real-word high-scoring Scrabble games by going to ever-more-obscure references in search of suitable words. It is amazing how large a fraction of the maximum possible score is achievable using as references Webster's Second and Third and the Oxford English Dictionary (as well as derived forms of words appearing therein). The May 1974 Word Ways reports that the highest-known single-move Scrabble score is 1,961 points, 63 per cent of the theoretical maximum. Elsewhere in this issue, a complete-game Scrabble score of 4,142 points is detailed, 74 per cent of the theoretical maximum.